CLAIMS

[1] A heating device comprising:

a cylindrical heating member configured to heat and fix a toner image carried on a recording sheet brought into contact with a periphery of the heating member by rotation;

a first heating unit disposed within the heating member and having a first heat generating section including a heating generating portion facing a central portion of the recording sheet, and a first no-heat generating section continuous with the first heat generating section; and

a second heating unit disposed within the heating member and having a second no-heat generating section opposed to the first heat generating section, and a second heat generating section opposed to the first no-heat generating section,

wherein MRnh, SRnh and ΣRnh satisfy the formula (1):

$\Sigma Rnh \geqq 30.5 \cdot Ln(Ht)+382$ ... ...formula (1),

where MRnh is a mean value of heat distribution in the first no-heat generating section of the first heating unit; SRnh is a mean value of heat distribution in the second no-heat generating section of the second heating unit; ΣRnh(= MRnh+SRnh) is the sum total of the mean value of heat distribution in the first no-heat generation section and the mean value of heat distribution in the second no-heat generating section; and $Ht = vp/(Mh \cdot \lambda)$ where vp is a fixing speed (m/s), Mh a heat capacity per unit length of the heating member (J/(°C·m))and λ a heat conductivity of a material forming the heating member (W/(m·°C)).

[2] A heating device comprising:

a cylindrical heating member configured to heat and fix a

toner image carried on a recording sheet brought into contact with a periphery of the heating member by rotation;

a first heating unit disposed within the heating member and having a first heat generating section including a heating generating portion facing a central portion of the recording sheet, and a first no-heat generating section continuous with the first heat generating section; and

a second heating unit disposed within the heating member and having a second no-heat generating section opposed to the first heat generating section, and a second heat generating section opposed to the first no-heat generating section,

wherein MRnh satisfies the formula (2):

$MRnh \leqq -21.9 \cdot Ln(Ht) - 198$ ... ...formula (2),

where MRnh is a mean value of heat distribution in the first no-heat generating section of the first heating unit; and $Ht = vp/(Mh \cdot \lambda)$ where vp is a fixing speed (m/s), Mh a heat capacity per unit length of the heating member (J/(°C·m))and λ a heat conductivity of a material forming the heating member (W/(m·°C)).

[3] A heating device comprising:

a cylindrical heating member configured to heat and fix a toner image carried on a recording sheet brought into contact with a periphery of the heating member by rotation;

a first heating unit disposed within the heating member and having a first heat generating section including a heating generating portion facing a central portion of the recording sheet, and a first no-heat generating section continuous with the first heat generating section; and

a second heating unit disposed within the heating member and having a second no-heat generating section opposed to the first

heat generating section, and a second heat generating section opposed to the first no-heat generating section,

wherein MRnh, SRnh and ΣRnh satisfy the formulae (1) and (2):

$\Sigma Rnh \geqq 30.5 \cdot Ln(Ht)+382$ ... ...formula (1)

$MRnh \leqq -21.9 \cdot Ln(Ht)-198$ ... ...formula (2),

where MRnh is a mean value of heat distribution in the first no-heat generating section of the first heating unit; SRnh is a mean value of heat distribution in the second no-heat generating section of the second heating unit; ΣRnh(= MRnh+SRnh) is the sum total of the mean value of heat distribution in the first no-heat generation section and the mean value of heat distribution in the second no-heat generating section; and $Ht = vp/(Mh \cdot \lambda)$ where vp is a fixing speed (m/s), Mh a heat capacity per unit length of the heating member (J/(°C·m))and λ a heat conductivity of a material forming the heating member (W/(m·°C)).

[4] The heating device according to claim 1, wherein

the mean value SRnh satisfies the formula (3):

$SRnh \leqq 20\%$ ... ...formula (3).

[5] The heating device according to claim 4, wherein the second no-heat generating section of the second heating unit includes a filament coil into which a shortcircuiting stem is inserted.

[6] The heating device according to claim 3, which satisfies the formula (4):

$Ht \geqq 7.74\times10^{-6}$ ... ...formula (4).

[7] The heating device according to claim 1, wherein the heating member is a heating roller comprising a cylindrical core coated with a coat layer, the core being formed from an iron material.

[8] An image forming apparatus comprising:

sheet feeding means for feeding recording sheets;

an image forming section for forming an image on a recording sheet fed from the sheet feeding means based on image data; and

a heating device configured to heat and fix the image formed on the recording sheet, the heating device including:

a cylindrical heating member configured to heat and fix a toner image carried on a recording sheet brought into contact with a periphery of the heating member by rotation;

a first heating unit disposed within the heating member and having a first heat generating section including a heating generating portion facing a central portion of the recording sheet, and a first no-heat generating section continuous with the first heat generating section; and

a second heating unit disposed within the heating member and having a second no-heat generating section opposed to the first heat generating section, and a second heat generating section opposed to the first no-heat generating section,

wherein MRnh, SRnh and ΣRnh satisfy the formula (1):

$\Sigma Rnh \geqq 30.5 \cdot Ln(Ht)+382$ ... ...formula (1),

where MRnh is a mean value of heat distribution in the first no-heat generating section of the first heating unit; SRnh is a mean value of heat distribution in the second no-heat generating section of the second heating unit; ΣRnh(= MRnh+SRnh) is the sum total of the mean value of heat distribution in the first no-heat generation section and the mean value of heat distribution in the second no-heat generating section; and $Ht = vp/(Mh \cdot \lambda)$ where vp is a fixing speed (m/s), Mh a heat capacity per unit length of the heating member (J/(°C·m))and λ a heat conductivity of a material forming the heating member (W/(m·°C)).